

7-4: The student will demonstrate an understanding of how organisms interact with and respond to the biotic and abiotic components of their environment.
(Earth Science, Life Science)

Key Concepts:

Soil properties: soil profile, composition, texture, particle size, permeability, pH

Groundwater: permeable, zone of saturation, water table

Surface-water: tributaries, drainage basin, watershed, divide

Earth resources: renewable, nonrenewable, depletion, conservation, global warming

Supporting Web Sites

Habitats

<http://library.thinkquest.org/J0113187/tankshabitats.html>

This website describes the features of various habitats.

7-4.1

Food Chains and Webs

<http://www.vtaide.com/png/foodchains.htm>

This interactive website describes the components of a food chain and allows students to create a food web.

7-4.2

Nature Notes-Food Chains and Food Webs

<http://www.eelsinc.org/id43.html>

This website discusses the energy flow in food chains, food webs, and energy pyramids.

7-4.2

Know Your Watershed

<http://email.ctic.purdue.edu/KYW/>

This website provides information about watersheds including facts about their importance to humans.

7-4.5

Renewable Energy Basics (relates only to energy)

http://www.nrel.gov/learning/re_basics.html

This website provides examples of renewable resources including benefits as well as energy for the future.

7-4.6

Suggested Literature

Breining, G. (1999). *The northern forest*. New York: Marshall Cavendish Corporation
ISBN 0-7614-0901-7 Lexile Level: 1110L

This book focuses on the interaction of the organisms within the northern forest. Emphasis is placed on the energy flow of the various ecosystems and on how abiotic factors, such as fire and acid water, affecting the habitat.

7-4.2; 7-4.3

Burnie, D. (2004) Kingfisher knowledge: *Endangered planet*. New York: Kingfisher Books

ISBN 0-7534-5776-8

This book describes the impact humans have on the environment and how living things change and adapt.

7-4.3

Crensen, V. (2003). *Horseshoe crabs and shorebirds: the story of a food web*.

Ann Arbor, MI: Cavendish Press

ISBN 0-7614-5115-3

This book illustrates a shoreline food web involving the journey of the horseshoe crab.

7-4.2

Dobson, C., & Beck, G. (1999). *Watersheds: a practical handbook for healthy water*.

Toronto, Ontario, BC: Firefly Books Inc

ISBN 1-55209-330-1

This book provides information about watersheds and its impact upon the environment. Other topics include bioregions and aquatic habitats, water and nutrient cycles, water and air pollution, invasions of exotic species, habitat loss, and ecological restoration.

7-4.5

Hamilton, G. (2005). *Frog rescue: changing the future for endangered wildlife*. Toronto,

Ontario, BC: Firefly Books Inc

ISBN 1552975975

This book addresses the declining frog population and scientists work to save the frog population. Topics include the frog dependency on water and land food chains, how other organisms are in turn dependent upon the frog and the effects of pollution, disease, droughts, and bush fires on biodiversity in frog habitats.

7-4.3

Johnson, R. (2001). *A walk in the desert*. Minneapolis, MN: Lerner Publications Co.

ISBN 1-57505-152-4

This book provides information about the interrelationships of plants and animals that live in the desert.

7-4.1

Mastro, J. & Wu, N. (2003). *Antarctic ice*. New York: Henry Holt and Co.

ISBN 0-8050-6517-2

This book provides information about Antarctic food webs and the importance of phytoplankton and algae.

7-4.2

Nardi, J. (2003). *World beneath our feet: a guide to life in the soil*. New York: Oxford Press.

ISBN 0195139909

This book describes the organisms in the soil ecosystem. It also includes general information about soil, how it is formed, what kinds of microbial interactions nourish it, a discussion of human misuse of the soil as a natural resource, and how composting can help soil quality.

7-4.4

Wallace, M. (2001). *America's prairies and grasslands: guide to plants and animals*. Golden, CO: Fulcrum Publishing.

ISBN 1-55591-992-8

Readers of this book will gain insight about the types of plants and animals that reside within these habitats.

7-4.3

Winner, C. (2003). *Life in the tundra*. Minneapolis, MN: Lerner Publications Co.

ISBN 0822546868

This book provides information on the ecosystem of the tundra. Maps, diagrams, and color photographs are included as well.

7-4.1

Suggested Streamline Video Resources

The Biology of Water: The Ocean Realm (Saltwater Ecology)

This program examines the food webs of the sea. Producers, consumers, decomposers as well as examples of primary consumers and secondary consumers are explained.

ETV Streamline SC

21:11

7-4.2

Biology: The Science of Life: Ecology: Organisms in Their Environment

Food Chains and Food Webs

Pyramids of Energy and Numbers: Consumer Levels

The segments provide examples of the various types of food webs and food chains found within an environment. An examination of how energy flows is also discussed.

ETV Streamline SC

7:39 to 12:00

7-4.2

Enviro-Tacklebox: Module 4:

Forces in the Environment:

Force of Floods

The History of Flooding: Helpful to Egyptians, Harmful to Americans

This segment provides insight into the beneficial and harmful effect of flooding in an environment.

ETV Streamline SC

0:10 to 2:30

7-4.3

A Natural Focus with Laurie Sanders: What is a Watershed?

This program traces the movement of a water system known as the Connecticut River.

ETV Streamline SC

5:00

7-4.5

Water Smart: Water as a Natural Resource

Ecosystems: Watersheds, Estuaries, and Wetlands 2:25

This video examines the role that watersheds, estuaries, and wetlands play within an ecosystem.

Basics of Physics: Exploring Energy

Nonrenewable Resources 5:47

Renewable Resources 5:52

Problems Associated with Our Dependence on Fossil Fuels 3:52

Conserving Energy 11:35

The segments compare and contrast nonrenewable and renewable energy resources, describe the implication of depletion, and explain the importance of conserving energy.

18:55 to

ETV Streamline SC

7-4.6

Career Connections

Ecological modeler

Ecological modelers study ecosystems, the control of environmental pollution, and the management of resources. (7-4)

Environmental Consultant

Environmental Consultants look at ecological impacts of conservation and development. They also recommend different methods to solve ecological problems. (7-4)

Environmental chemist

Environmental chemists may study the toxicity of various chemicals—how those chemicals affect plants, animals, and people. (7-4)

Environmental ecologist

Environmental ecologists study the relationships between organisms and their environments and the effects of influences such as population size, pollutants, rainfall, temperature, and altitude. (7-4)

Hydrologists

Hydrologists study the quantity, distribution, circulation, and physical properties of underground and surface waters. (7-4)